REMARKS

Claims 24-55 are pending. Claim 28 is objected to. Claims 24-55 are rejected. Claims 24-26, 28, 30-34, 36-39, 44, 51, and 53 are amended. Claim 29 is canceled. Reconsideration of the application in view of the current claims is respectfully requested and further in view of the following remarks.

I. Claim Amendments

Support for the claim amendments can be found throughout the specification and claims as originally filed. More specifically, the feature in claim 24 of a constricted region with a transverse dimension substantially smaller than the first radius of gyration is supported by the disclosure, e.g., in paragraphs 0010 and 0023. Support for the feature in claim 32 of constricted regions having a depth substantially less than a radius of gyration of smaller nucleic acid molecules can be found in paragraph 0010. Support for the feature in claims 39 and 44 of constricted regions having a depth substantially less than an equilibrium spherical shape of the small nucleic acid molecules can be found in paragraphs 0005, 0011, and 0012. Support of the feature in claims 51 and 53 of entropic barriers to selected nucleic acid molecules can be found in paragraphs 0011, 0012, 0023, 0031, 0035, 0037, 0038, and 0040 and in figures 1, 2, 10, and 11. Additionally support for the claim amendments introduced herein can found in paragraphs 0008 and 0009. No new matter is introduced by this Response, and thus entry thereof is respectfully requested.

II. Claim Objection

Claim 28 is objected to for reciting "nonofludic". Applicants have amended the claim to correct the spelling.

III. Claims Rejection Under 35 U.S.C. §102

Claims 24-41 and 44-55 are rejected under 35 U.S.C. §102(e) for alleged anticipation by Austin (U.S. Patent No. 5,837,115)

A patent claim is anticipated if a single prior art reference expressly or inherently discloses each and every claim element. A close examination of the cited reference reveals that this standard is not met.

Austin discloses an array for fractionating microstructures in a fluid medium. The device uses an array of obstacles to accomplish this task. Austin, however, does not teach or even suggest a device comprising a plurality of constricted regions wherein the constricted regions have a transverse dimension substantially smaller than the first radius of gyration of the nucleic acids disposed therein. Moreover, Austin does not teach a device with unconstricted regions or channels that have a transverse dimension or are of sufficient length and depth as instantly claimed. In addition, nowhere in the cited disclosure of Austin are there teachings or even hints of alternating constricted and unconstricted regions. Furthermore, Austin does not disclose the existence a entropic barriers or means for creating a series of such barriers to separate nucleic acids by size. Because the base claims 24, 32, 39, 44, 51, and 53 contain one or more of these features which are missing in the cited disclosure of Austin, these claims and their dependents are novel in view of Austin.

The Office Action also notes that the claims as originally presented do not encompass the nucleic acids to be separated but merely state the intended use. Applicants respectfully submit that this rejection is moot in view of the claim amendments made herein.

The Office Action further asserts that "the constricted regions have a transverse dimension S_d that can be down to as low as 10 nm and as high as 1000 nm. . . This dimension overlaps the disclosed constriction range of the instant invention and would thereby meet the claimed constricted region." Applicants respectfully contend that Austin does not disclose constricted regions as instantly claimed. For instance, the base claim 24, as amended, recites that "the constricted regions having a transverse dimension substantially smaller than the first radius of gyration, to influence the shape of the nucleic acid molecules moving through the channels."

By contrast, Austin teaches away from this requirement by emphasizing that the constricted regions (separation distance) should be equal to the radius of gyration (*see* col. 11, lines 5-9 and claim 8). This description goes against certain claimed subject matter which relate to the use of entropically unfavorable regions or barriers having dimensions that are substantially smaller than the radius of gyration of the nucleic acids (paragraph 0011).

In sum, because the base claims 24, 32, 39, 44, 51, and 53 contain one or more of the above described features which are missing in the cited disclosure of Austin, these claims and their dependents are novel. Applicants respectfully request withdrawal of this rejection.

IV. Claims Rejection Under 35 U.S.C. §103

Claims 42 and 43 are rejected under 35 U.S.C. §103(a) for being allegedly unpatentable over Austin in view of Wilding

The Office bears the burden of establishing a *prima facie* case of obviousness which requires a showing that: (1) the references must teach or suggest all of the claim limitations; (2) there must be some be some suggestion or motivation to combine the reference teachings; and (3) there must be a reasonable expectation of success. Applicants respectfully submit that a prima facie case of obviousness has not been established for the following reasons.

Claim 42 depends on base claim 39 and requires a detector positioned about the channel to detect desired molecules in the channel. Claim 43 further specifies that the detector comprises an optical microscope. For the reasons stated above in regards to the § 102(e) rejection, Austin does not teach or even suggest all element of the base claim 39. The secondary reference by Wilding also does not cure the deficiencies of the primary reference. As such, the two references alone or in combination do not render a device having the detector described in claims 42 and 43 obvious. Applicants respectfully request that Examiner withdrawal this rejection under 35 U.S.C. §103(a).

CONCLUSION

Applicants submit that this paper fully addresses the Office Action mailed July 5, 2007. Applicants respectfully request the Examiner allow claims 24-55 and advance the application to issuance. Should the Examiner have any questions, the Examiner is encouraged to contact the undersigned attorney at (650) 565-3895. However, the Commissioner is authorized to charge any additional fees which may be required, including petition fees and extension of time fees, to Deposit Account No. 23-2415, Docket No. 33205-709.

Respectfully submitted,

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